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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 20040315

Application Number: 09/841,255
Filing Date: April 24, 2001
Appellant(s): KAMBE ET AL.

Peter S. Dardi
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12 February 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 1-4, 6-9, 12, 15 and 23-31.

Claims 10, 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

There is no teaching or suggestion in the cite art of record of a polishing composition, where the particles have the size distribution of claim 1, a single crystalline uniformity of at least about 90 wt% and either is composed of one of the compounds in claim 10 or has a purity of at least about 99% by weight.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because claim 30 cannot stand or fall on its own since it depends from claim 26. Thus it should be included in the third claim group, which is claims 26-29 and 31.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

4,842,837	Shimizu et al	6-1989
5,626,715	Rostoker	5-1997
5,389,194	Rostoker et al	2-1995
5,318,927	Sandhu et al	6-1994

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 15, 23 and 25 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 9 and 13 of copending Application No. 09/136,483. Although the conflicting claims are not identical, they are not patentably distinct from each other because the polishing composition of claims 9 and 13 of Application No. 09/136,483 suggests the polishing composition and method of claims 15, 23 and 25 of the present application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim 9 of Application No. 09/136,483 teaches a polishing composition comprising a dispersion of alumina particles, where the particles have an average particle diameter from about 5 nm to about 500 nm and where less than one in 10^6 particles have a diameter greater than three times the average particle size and claim 13 teaches this dispersion is an aqueous dispersion. Applicants have defined the phrase "effectively no particles" as meaning less than one in 10^6 particles on page 20, lines 4-12 of the specification. Thus claim 9 teaches a dispersion containing effectively no particles having a diameter greater than three times the average particle size. Since the claims teach a polishing dispersion, one of ordinary skill in the art would have found it obvious to use this polishing dispersion to polish or smooth a surface using the claimed composition.

Claims 1-4, 6, 15, 23-29 and 31 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 4, 14-18, 24 and 26 of copending Application No. 09/433,202. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed particle dispersion and claimed method of polishing using the particle dispersion of Application No. 09/433,202 suggest the polishing compositions and polish method claimed in the present application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim 1 of Application No. 09/433,202 teaches a particle dispersion comprising a liquid and particles having an average particle diameter from about 5 nm to about 50 nm and where less

than one in 10^6 particles have a diameter greater than three times the average particle size. Applicants have defined the phrase "effectively no particles" as meaning less than one in 10^6 particles on page 20, lines 4-12 of the specification. Thus claim 1 teaches a dispersion containing effectively no particles having a diameter greater than three times the average particle size. Claims 3 and 4 teaches the particles can be composed of silica, silicon carbide, TiO_2 and Fe_2O_3. Claims 14-18 teaches the liquid can be water, an aqueous solution or an organic liquid, which is a nonaqueous solution. Claim 24 teaches the particles have a distribution such that at least 95% of the particles have a diameter greater than 40% of the average diameter and less than 160% of the average diameter. Claim 26 teaches using the claimed dispersion as a polishing composition, which suggests smoothing a surface by polishing the surface with the claimed composition.

Claims 26 and 29-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimizu et al.

This reference teaches silica particles used in polishing slurries. The particles have a monodispersed uniform particles size of 50 nm or less. Examples 1, 3 and 4 teaches uniform silica particles all have a particle size of 25, 42 or 17 nm and a purity of greater than 99.9%. The taught silica particles have a single crystal phase and the statement that the particles are uniform means the particles have a uniformity of 100%. Since the reference teaches the particles are used in a polishing slurry, it implicitly teaches a polishing dispersion and the use of this slurry to smooth a surface or polish a surface. The claimed dispersions and methods read upon those taught by the reference.

Claims 1, 2, 6, 7, 9, 15, 23, 25-27 and 29-31 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rostoker et al (U.S. Patent 5,389,194).

This reference teaches a method of polishing a surface using a polishing composition composed of particles dispersed in an aqueous solution where the polishing is performed using a polishing pad. The taught particles are composed of alpha alumina or silica particles. Example 3 teach these particles are composed of at least 90% of alpha alumina particles, where the particles have an average particle size of 10 nm (the X value) and a distribution where all the particles have a size within 10% of the average particles size (the Y value). This means that all the particles are within the range of 10% of the average particle size and 110% of the average particles size. Accordingly, there are no particles have a size greater than 5 times the average particle size. The claimed dispersions and methods clearly read upon those taught.

Claims 1, 2, 6, 7, 9, 15, 23, 25-27 and 29-31 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Rostoker (U.S. Patent 5,626,715).

This reference teaches a method of polishing a surface using a polishing composition composed of particles dispersed in an aqueous solution where the polishing is performed using a polishing pad. The taught particles are composed of alpha alumina or silica particles. Example 3 teach these particles are composed of at least 90% of alpha alumina particles, where the particles have an average particle size of 10 nm (the X value) and a distribution where all the particles have a size within 10% of the average particles size (the Y value). This means that all the particles are within the range of 10% of the average particle size and 110% of the average particles size. Accordingly, there are no particles have a size greater than 5 times the average particle size. The claimed dispersions and methods clearly read upon those taught.

Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al in view of Sandhu et al, Rostoker and Rostoker et al.

As stated above, Shimizu et al teach the claimed polishing compositions comprising a dispersion of silica particles. This reference does not teach the composition of the liquid used in the polishing composition, but one of ordinary skill in the art would have found it obvious to use liquids conventionally used in polishing compositions. Sandhu et al, Rostoker and Rostoker et al all teach aqueous and nonaqueous solutions are conventionally used in polishing compositions. Thus one of ordinary skill in the art would have found it obvious to use an aqueous solution as the liquid in the taught polishing composition. The references suggest the claimed composition.

Claims 1, 2, 6-9, 12, 15, 23, 25-27 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker or Rostoker et al.

Both of these references teach a method of polishing a semiconductor surface using a polishing composition composed of particles dispersed in an aqueous solution where the polishing is performed using a polishing pad. While the references do not teach the polishing is preformed with a motorized polisher, one of ordinary skill in the art would have found it obvious to use a motorized polisher since motorized polishers are conventionally used to polish as semiconductor surface in combination with a polishing composition. The particles are composed of silica particles or alumina particles, which are all substantially in the alpha phase, preferably at least 90% or 100% of the particles in the alpha phase. The taught particles have an average particle size in the range of 10-100 nm, preferably 10-50 nm. This range overlaps the claimed range. The references teach the particles have a distribution where all the particles have sizes, which fall within 10-50% of the average particle size, which is the taught P value. This means that all the particles are within the range of P% of the average particle size and (100+P)% of the average particles size. This teaching is clearly exemplified by examples 1 and 3 of both

references and in claims 2 and 3 of Rostoker. The references clearly suggest the claimed composition and methods.

Claims 1-3, 6, 15 and 23-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu et al in view of Rostoker et al or Rostoker.

Sandhu et al teach a method of smoothing a surfacing using a chemical-mechanic polishing composition comprising alumina or silica abrasive particles dispersed in either an aqueous or a nonaqueous solution. Sandhu et al do not teach the particle size characteristics for the taught abrasive particles. One of ordinary skill in the art would have found it obvious to use conventional chemical mechanical abrasive particles as the abrasive particles in the taught method. Rostoker et al and Rostoker all teach conventional chemical mechanical abrasive particles. Therefore, one of ordinary skill in the art would have found it obvious to use the particles of these references as the particles in the composition of Sandhu et al. These particles in Rostoker et al and Rostoker all have particle size characteristics, which fall within or overlap the claimed size characteristics. The references suggest the claimed compositions and processes.

(11) Response to Argument

The provisional obviousness-type double patenting rejections

Appellants' arguments with respect to the provisional obviousness-type double patenting rejections are all noted. MPEP 804.02 sets forth reasons for making obviousness-type double patenting rejections in post-URAA applications. Appellants disagreements with MPEP 804.02 are noted. Since the Examiner is required to follow the procedures set forth in the most recent edition of the MPEP, appeallants' arguments cannot overcome the provisional rejections.

Appellants argue that the provisional obviousness-type double patenting rejections must be based on the two way test. This test is applicable if the claims in the later filed case could have been filed in earlier filed case and if there has been an administrative delay. The claims in 08/136,483 and 09/433,202 could not have been filed in this case, since this case was filed over two years after 08/136,483 and 09/433,202, nor could they have been filed in the parent case for this application. The Examiner agrees the first part of the requirement for this test to be applicable has been met, but the second part has not been met since there is no evidence of administrative delay in the parent application, in 08/136,483, in 09/433,202 or in this application. In the absence of administrative delay, a one-way test is appropriate. *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993) (applicant's voluntary decision to obtain early issuance of claims directed to a species and to pursue prosecution of previously rejected genus claims in a continuation is a considered election to postpone by the applicant and not administrative delay). Unless the record clearly shows administrative delay by the Office and that applicant could not have avoided filing separate applications, the examiner may use the one-way obviousness determination and shift the burden to appellant to show why a two-way obviousness determination is required. See MPEP 804(II)(B)(1)(b). Appellant has not shown why a two-way obviousness determination is required.

It is noted appellants filed a terminal disclaimer over 09/433,202 in the parent application for this application.

The 35 USC 102(b) and 103 rejections based on Shimizu et al

With respect to appellants' argument with respect to the 35 USC 102(b) rejection over Shimizu et al, appellants are correct the figure is insufficient to evaluate if the particle are

monodispersed or not. The examples and the statement in column 3, lines 16-17 that the particles are uniform are sufficient to evaluate the meaning of "highly monodispersed". Appellants have not rebutted nor addressed the teachings of the examples and the statement in column 3, lines 16-17. Accordingly, appellants' arguments are not convincing.

Appellants' argument with respect to the crystallinity of the particles in Shimizu et al is being raised for the first time. While the reference does not teach the crystallinity of the particles, it is clear from the reference that that the silica particles all have the same crystal phase since there is no indication that they are not. Appellants neither have nor rebutted this statement. The fact the taught particles may be amorphous is immaterial since appellants' specification includes amorphous as one of the possible crystal structures for silica on page 12. This teaching indicates appellants considered amorphous as a crystalline phase of silica. Therefore, even if the particles are amorphous, they have a single crystalline phase, based on appellants' definition.

Appellants' arguments with respect to the 35 USC 103 rejections over Shimizu et al in view of Sandhu et al, Rostoker and Rostoker et al are noted. The argument is that Shimizu et al does not establish a *prima facie* case of anticipation. The arguments with respect to the 35 USC 102(b) rejection were not found convincing for the reasons given above. Accordingly, appellants' arguments over this rejection are not convincing for the same reasons.

The 35 USC 102 and 103 rejections based on the Rostoker patents

Appellants have argued the 35 USC 102 rejections in two parts.

Appellants' first argument is that the patents do not teach the claimed invention. Appellant's state that the patents are directed to polishing substrates using the materials of the Siegel patent (5,128,081). The patents do not state this. Reading all of column 5 in '715 and all

of column 6 of '194, it is clear that any source of nanosized alumina and silica particles can be utilized as long as they have the taught particle size distribution. While the patents discuss the Siegel patent by name, lines 52-56 in column 6 of '194 and lines 54-57 in column 5 of '715 state "Given recent advances in methods of producing such nanocrystalline material..." and lines 24-30 in column 6 of '194 and lines 29-35 in column 5, of '715 state "Recently, methods have been developed for controllably producing ultrafine-grained or nanocrystalline, materials...These new methods ...". These statements clearly indicate that the patents are not directed to a method of using the particles of Siegel, but method of polishing using nanocrystalline particles in general, where the particles have the defined size distribution. Appellants' argue the patents are unintelligible and is gobbledygook. This argument is not convincing. The presence of internal inconsistencies is itself not a reason for stating the patents are unintelligible and gobbledygook. The standard is whether one of ordinary skill in the art can understand and practice the claimed invention. The Examiner can understand what the patent teaches, the Primary Examiner who issued the patents understood what the patents teach, otherwise they would not have been issued, and appellants must be able to understand the patents since they have presented arguments discussing what the patents teach and what they do not teach. With respect to Dr. Singh declaration of 10 December 2001, the Examiner did not find Dr. Singh's criticisms of one of the methods for determining the Q value in the patents as evidence that one of ordinary skill in the art could not determine the Q value. As stated in the Office action of 28 October 2002, the patents teach Q is inversely related to Y and give numerical values of Q in the examples. Thus the fact Dr. Singh finds the other method for determining Q given in the patents unclear and that the method in the patents are not found in the books cited by Dr. Singh does not detract from the

rest of the teachings in the patents nor does it show that the Q value cannot be determined by one of ordinary skill in the art. Appellants' comments with respect to the confidence interval based on a particular probability level is not understood, since appellants are claiming a dispersion of particles having a specific particle size distribution. There is nothing in appellants' claims or specification addressing the confidence interval based on a particular probability level of appellants' particles. Appellants' claims do not exclude a "tail in the distribution" in the claimed particle size distribution. Appellants have not claimed the percentage of each particle size which falls within the claimed distribution, applicants have only claimed the average size, the maximum size and the minimum size in claims 1-4, 6-9 and 12 and the average size and maximum size in claims 15 and 23-31. There is nothing in the claims to exclude a tail as long as the maximum and minimum size of the particle distribution, including the tail, falls within that claimed. There has been no showing of such a tail in the particles of the patents, nor, if such a tail exist, that it is outside and does not overlap the appellants' claimed ranges. Appellants have not shown the particles taught in the patents are different and unobvious over those claimed.

Appellants' second argument is that the patents do not enable the claimed invention. They argue that the patents are non-enabling by reciting some of the prosecution history of the parent application. This summary of some of the prosecution history starts in line 19 on page 27 and ends on page 29, line 12. This summary of parts of the prosecution history of the parent application does not show non-enablement of the patents since none of arguments presented in the parent application have been made in this application and the declaration discussed has not been presented as evidence in this application. Appellants are reminded every application is

treated on its own merits. Any arguments made in the parent application do not carry over to the child application.

Appellants statement with respect to clear error in law is not well taken. Appellants' summary of the prosecution history of the parent leaves out the fact the Examiner cited a patent showing filtering of nanosized colloidal particles using filters having a mesh size of 2-1000 nm were known in 1989 in the office action of 25 August 2000 rebutting Dr, Singh declaration that such filters were not known in the art as of 1997. Appellants did not present any evidence rebutting the teaching of the patent, did not raise this issue in their response to that office action, and did not mention it again in any subsequent response in the parent application. Thus, in the parent application, the Examiner did evaluate the declaration and provided evidence rebutting the assertions made in the declaration.

Appellants' arguments with respect to the 35 USC 103 rejections are noted. The argument is that the patents do not establish a *prima facie* case of anticipation. The arguments with respect to the 35 USC 102(b) rejection were not found convincing for the reasons given above. Accordingly, appellants' arguments over this rejection are not convincing for the same reasons.

The 35 USC 103 rejection based on Sandhu et al

Appellants' arguments with respect to the 35 USC 103 rejections are noted. The argument is that the Rostoker patents do not teach the claimed particles. The arguments with respect to the 35 USC 102(b) rejections over the Rostoker patents were not found convincing for the reasons given above. Accordingly, appellants' arguments over this rejection are not convincing for the same reasons.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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CMB
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